

Reduced Arm Swing 16 Years before the Diagnosis of Young Onset Parkinson's disease - A Case Report.

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OBJECTIVE:

To report a case of reduced arm swing at age 21 in a patient diagnosed with Parkinson's disease at age 37.

ABSTRACT:

Parkinson's disease has both motor and non motor symptoms. The motor symptoms of Parkinson's disease include bradykinesia, resting tremor, rigidity and postural instability. Sometimes the non motor symptoms may antedate the motor symptoms by years, but the final diagnosis of Parkinson's disease still rests upon the presence of motor symptoms. Bradykinesia is the most common and most disabling symptom of Parkinson's disease. Reduced arm swing is one of the manifestations of bradykinesia and may be reported in the beginning of the course of disease. Reduced arm swing may be first noticed by spouse or family members during walking or while performing activities of daily living. Our patient was diagnosed with Parkinson's disease at the age of 37 years. His wife noticed that the patient had absent right arm swing when she met him on their first date at the age of 21, sixteen years before the patient was diagnosed with Parkinson's disease. His symptoms of Parkinson's disease initially started on the right side i.e. the side of reduced arm swing.

INTRODUCTION:

Parkinson disease (PD) is the second most common neurodegenerative disorder, characterized by both motor and non-motor symptoms [1]. Bradykinesia is considered as one of the cardinal motor symptoms of PD along with tremor, rigidity and postural instability [2]. Bradykinesia is described as slowness of bodily movements and its initial manifestation usually involves slowness in performing daily living tasks, including loss of fine motor control and slow reaction times [3]. Patients usually complain that they take noticeably longer to complete the activities of daily living such as eating, dressing or showering. Patients may describe difficulty fastening buttons, cutting food or tying shoelaces. Bradykinesia can be present as an early sign of the disease and is experienced by almost all patients. There are many manifestations of bradykinesia such as micrographia, difficulty with dexterity, decreased facial expression, decreased rate of blinking, drooling, difficulty in rising from a low chair, short stride of gait and

asymmetry of shoulder shrug. It is hypothesized that bradykinesia is the result of a disruption in normal motor cortex activity mediated by reduced dopaminergic function [2]. Other studies show that bradykinesia can occur due to disruption in the cortical mechanisms that prepare and execute the commands to move [4]. No specific diagnostic test for PD has been developed and it is important to understand the clinical signs characteristic of the disease [5]. Symptom severity and longitudinal course of the PD can be measured by Unified Parkinson's Disease Rating Scale (UPDRS). In this rating scale, bradykinesia can be measured by observing patient's facial expressions, hand movements, finger taps and rapid alternating movements of hands while paying particular attention to slowness and decrementing amplitude of movements [6]. UPDRS is currently the best accepted means of determining disease progression in clinical trials [7]. Reduced arm swing on the ipsilateral side may be the initial manifestation of bradykinesia but it is usually seen accompanying other symptoms. This case is particularly interesting as the reduced arm swing was seen about 16 years before diagnosis and the manifestations of other motor symptoms.

CASE REPORT:

Our patient was right handed male who was diagnosed with Parkinson's disease at the age of 37. Upon examining the detailed history of the patient, it was found that he noticed slowness of right arm swing at the age of 20 years and developed complete lack of right arm swing at the age of 21. When his first wife met him at the age of 21 for dating, he did not use to swing his right arm during walking. Wife still recalled asking him about his inability to swing his right arm. He later developed other symptoms of Parkinson's disease including rigidity, micrographia, difficulty with dexterity, decreased facial expression, decreased rate of blinking, drooling, difficulty rising from a low chair, short stride of gait and difficulty turning. He responded well to dopaminergic medications.

DISCUSSION:

Asymmetry of clinical features is a common finding in Parkinson's disease [8]. When symptoms first appear, patients exhibit unilateral motor deficits as seen in this patient. As the disease progresses, bilateral motor deficits develops, however, clinical asymmetry is still found late in the course of the disease, with more marked extrapyramidal involvement on the body side first affected [8]. Parkinson disease has traditionally been considered an old age disease and is difficult to diagnose at early stages. Differentiating PD from other forms of parkinsonism is difficult as its symptoms are usually confused with natural aging in elderly or overlaps with other syndromes [2]. Diseases with atypical parkinsonism start more symmetric than PD which can help in the diagnosis [9]. The full range of cardinal symptoms of Parkinson disease such as bradykinesia, tremor, rigidity and postural instability usually appear in old age and used to diagnose the disease [2]. However, this case study shows that some manifestations of bradykinesia can be present more than a decade before the onset of other motor symptoms, and can start as early as 20 years of age in young onset PD patients. Furthermore, this study underscores the importance of not only the detailed physical examinations but also the utility of diagnostic investigations, such

as genetic tests and neuroimaging techniques, such as high field strength T₂ weighted MRI, [¹⁸F]-fluorodopa positron emission tomography, [¹¹C]-raclopride imaging of dopamine D₂ receptors and single photon emission computed tomography of striatal dopamine reuptake sites, for accurate diagnosis of PD [2]. The manifestations of PD on physical examination are mild at early stages, which make the utilization of diagnostic tests very important for accurate diagnosis.

The time of onset of PD is variable and symptoms can appear as early as an age of 20. Bradykinesia is one of the initial symptoms of Parkinson's disease. A thorough and complete understanding of clinical manifestation of PD is essential not only for proper management of the conditions but also for the differentiation of the disease from other neurodegenerative disorders [2]. This case study establishes decreased arm swing as an early symptom of the young onset of Parkinson's disease and as one of the manifestations of bradykinesia. Although there are no neuroprotective medications available at the present time but symptoms like this may be considered as very early markers of Parkinson's disease. Bradykinesia progresses as the disease advances and responds well to dopaminergic treatments of Parkinson's disease.

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